NPS Form 10-900
(Rev. Aug. 2002)

OMB No. 1024-0018
(Expires Jan. 2005)

912

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES REGISTRATION FORM

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name: Bridge 15

other names/site number: River Bridge

2. Location

street & number: F.A.S. Highway 177 (River Road) (Town Highway 3) not for publication N/A

city or town: Sharon vicinity: N/A

state: Vermont code: VT county: Windsor code: 027 zip code: 05065

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this X nomination ____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets ____ does not meet the National Register Criteria. I recommend that this property be considered significant ___ nationally X statewide ____ locally. (See continuation sheet for additional comments.)

Signature of certifying official — Date 7-7-08

Vermont State Historic Preservation Office
State or Federal Agency or Tribal government

In my opinion, the property ____ meets ___ does not meet the National Register criteria. (See continuation sheet for additional comments.)

Signature of commenting official or other official and title — Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:
__√__ entered in the National Register
____ See continuation sheet.
____ determined eligible for the National Register
____ See continuation sheet.
____ determined not eligible for the National Register
____ removed from the National Register
____ other (explain): ____________

Signature of the Keeper — Edson H. Beall (signature) **Date of Action** — 8.19.05

5. Classification

Ownership of Property: (Check as many boxes as apply)
____ private
__x__ public-local
____ public-state
____ public-Federal

Category of Property: (Check only one box)
____ building(s)
____ district
____ site(s)
__x__ structure(s)
____ object(s)

Number of Resources Within Property:

	Contributing	Noncontributing
buildings:		
districts:		
sites:		
structures:	1	
objects:		
total:	1	

Number of Contributing Resources Previously Listed in the National Register: 0

Name of Related Multiple Property Listing: Metal Truss, Masonry, and Concrete Bridges in Vermont
(Enter "N/A" if property is not part of a multiple property listing.)

6. Function or Use

Historic Functions: (Enter categories and subcategories from instructions)

Category:	Subcategory:
Transportation	Road-related

Current Functions: (Enter categories and subcategories from instructions)

Category:	Subcategory:
Transportation	Road-related

7. Description

Architectural Classification: (Enter categories from instructions)

other: Parker through truss

Materials: (Enter categories from instructions)

foundation: concrete abutments
roof:
walls:
other: structural steel elements

Narrative Description: (Describe the historic and current condition of the property on one or more continuation sheets.)

See continuation sheet.

8. Statement of Significance

Applicable National Register Criteria:
(Mark "X" in one or more boxes for the criteria qualifying the property for National Register listing)

__x__ A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
_____ B. Property is associated with the lives of persons significant in our past.
__x__ C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
_____ D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations:
(Mark "X" in all the boxes that apply.)

_____ A. Owned by a religious institution or used for religious purposes.
_____ B. Removed from its original location.
_____ C. A birthplace or a grave.
_____ D. A cemetery.
_____ E. A reconstructed building, object, or structure.
_____ F. A commemorative property.
_____ G. Less than 50 years of age or achieved significance with the past 50 years.

Areas of Significance: (Enter categories from instructions)	**Period of Significance:**
Transportation	1928-1958
Engineering	

Significant Person: (Complete if Criterion B is marked above)	**Significant Dates:**
N/A	1928

Cultural Affiliation:
N/A

Architect / Builder:
American Bridge Company

Narrative Statement of Significance:
(Explain the significance of the property on one or more continuation sheets.) See continuation sheet.

9. Major Bibliographical References

Bibliography:
(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.) See continuation sheet.

Previous Documentation on File (NPS):
_____ Preliminary determination of individual listing (36 CFR 67) has been requested.
_____ Previously listed in the National Register.
_____ Previously determined eligible for the National Register.
_____ Designated a National Historic Landmark.
_____ Recorded by Historic American Buildings Survey No. _____
_____ Recorded by Historic American Engineering Record No. _____

Primary Location of Additional Data:
_____ State Historic Preservation Office.
__x__ Other state agency: Vermont Agency of Transportation
_____ Federal agency.
__x__ Local government.
__x__ University.
_____ Other. Name of repository: Vermont State Library

10. Geographical Data

Acreage of Property: Less than one

UTM References (Place additional UTM references on a continuation sheet). ____ See continuation sheet

	Zone	Easting	Northing		Zone	Easting	Northing
1.	18	704394	4850579	2.			
3.				4.			

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.) See continuation sheet.

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.) See continuation sheet

11. Form Prepared By

Name / Title: Robert McCullough

Organization: Vermont Agency of Transportation, Historic Bridge Program Date: February, 2008

Street & Number: National Life Building, Drawer 33 Telephone: 802-828-3615

City or Town: Montpelier State: VT Zip Code: 05633-5001

12. Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps
A USGS map (7.5 or 15 minute series) indicating the property's location.
A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs
Representative black and white photographs of the property.

Additional Items (Check with the SHPO or FPO for any additional items)

13. Property Owner

(Complete this item at the request of the SHPO or FPO.)

Name / Title: Town of Sharon

Organization: _____ Date: _____

Street & Number: P.O. Box 250 Telephone: 802-763-8268

City or Town: Sharon State: VT Zip Code: 05065

Narrative Description

Bridge 15, erected in 1928, is a Parker through truss, and it carries Federal Aid Secondary (FAS) Highway 177 (River Road) (Town Highway 3) in Sharon across the White River. The bridge was successfully rehabilitated in 1994, and work included: a new composite concrete deck; replacement of selected floorbeams, stringers, and lateral bracing; partial replacement of truss expansion bearings (but retention of bearing shoes); repairs to substructure abutments; replacement of railing; and partial painting. The bridge retains a high degree of integrity in terms of location, design, setting, materials, workmanship, feeling and association. The structure will remain in continued highway use under the Vermont Historic Bridge Program's Preservation Plan for Metal Truss Bridges, and the town has enrolled Bridge 15 in that program, conveying a preservation easement for the bridge as part of that agreement

Bridge 15 crosses the White River in three spans. The Parker truss is 220 feet in clear span (center to center of bearings), and two approach spans (one at each end) are fifty-foot steel beam and girder structures. The bridge's overall length is 324 feet. The Parker truss contains ten panels, and each panel is twenty-two feet. The bridge's overall width is 22 feet 9 inches (center of truss to center of truss), establishing a 20 foot travel corridor, curb to curb. Truss depth at center span is 37 feet, and clearance at the end portal bracing is 14 feet 7 inches. The six central panels of each truss are reinforced by horizontal stiffeners, 18 feet 6 inches above the bottom chords, or approximately 15 feet of vertical clearance, and the two center panels each employ counter-diagonal struts, a web-design commonly used in the center panels of many Pratt and Parker trusses. The trusses are also reinforced laterally by a web of sway bracing, the base of which connects the horizontal stiffeners, with diagonals then crossing to connect opposite top chords; struts join the base of the sway bracing to the crossing of the diagonals. Top chords are braced, as well, by lateral and diagonal members and by portal bracing. Floor beams and stringers support a reinforced concrete deck. The superstructure stands on two, reinforced-concrete, solid-shaft piers, and two reinforced-concrete abutments. Abutments are protected by substantial fill and rip-rap. Box-beam guard railings frame the travel corridor.

Original plans for the bridge are dated January, 1928, and the superstructure was designed by N. W. Morgan for the Vermont State Highway Department. Arthur Bishop, Bridge Engineer for the department at the time, presumably approved the plans. Drawings confirm that the bridge was designed for two-lane travel and an original live-load capacity of H15. The construction contract employed "Standard Specifications for Steel Highway Bridges," as specified in the U.S. Department of Agriculture Bulletin No. 1259, and the structure received one shop coat of red lead and oil paint; one field coat of red lead and oil paint; and one field coat of approved graphite paint. Rehabilitation plans are dated April and May, 1993, by B. Donald, David Hoyne, and J. B. McCarthy, and establish that, as repaired, the bridge is currently designed to carry 36 tons of AASHTO HS-20 live load capacity.

Narrative Description (continued)

In its present form, Bridge 15 reveals most of its original features. Top chords are box girders with two channels and a continuous top cover plate with lattice undersides. Bottom chords are also built-up members with two channels with batten plates on top and bottom. In the truss webs, verticals and principal diagonals are rolled I-beams. Diagonals in panels two and eight are built-up I girders employing two sets of paired angles joined by a web plate. Horizontal stiffeners, and lateral cross bracing connecting the top chords are all girders assembled with paired angle sections and lattice bars. Rehabilitation of the floor system in 1994 included replacement of floor beams with W30x116 rolled steel beams; replacement of stringers with W18x46 rolled steel beams; and replacement of connecting angles in kind. Rivets that were removed were replaced with 7/8 inch diameter, high-strength type 1 bolts. The composite, reinforced concrete deck installed at that time is continuous over the piers.

Statement of Significance

Bridge 15 in Sharon is being nominated under Criteria A and Criteria C pursuant to the existing multiple property submission titled "Metal Truss, Masonry, and Concrete Bridges in Vermont," under the property type, "metal truss bridges," and the crossing clearly meets the registration requirements for this property type. The crossing is significant for its period of construction following the 1927 flood and for its representative Parker truss design, a frequently-used truss type for longer-span crossings rebuilt after the flood. A decade ago, Bridge 15 was one of five Parker truss bridges spanning the scenic White River in the adjoining towns of Hartford, Sharon and Royalton. Today, unfortunately, only three remain, and despite its standard and frequently-used design, Bridge 15 represents a bridge type that is becoming increasingly scarce. In addition to its role as a very visible engineering landmark, the bridge is also located at the westerly edge of Sharon village, a small but well-preserved historic district that stretches along the river corridor. The river crossing at Sharon village has historically been an important one for the entire town, and Bridge 15 is one of at least two important metal truss bridges to stand at that site. Moreover, by enrolling the bridge in Vermont's Historic Bridge Program, the town of Sharon is participating in an effort to demonstrate the feasibility of using metal truss bridges for continued highway use, as well as the fiscal wisdom of rehabilitating and maintaining these structures.

The bridge was erected in 1928 during the aftermath of the 1927 flood, an event that destroyed more than 1200 bridges of all types throughout the state. This devastation resulted in a dramatic public rebuilding campaign, marking one of Vermont's most important periods of bridge and highway construction, and metal truss bridges played a key role in that rebuilding drive. Bonds authorized by the state legislature generated funding for this enormous undertaking, but federal assistance had also become available by then. The state's bridge department expanded in size, and engineers emphasized standard building methods for different types of bridges to reduce costs and speed the process. Efforts to develop standard designs had begun in Vermont after World War I, part of a broader, national trend that emerged as state highway departments sought federal funding, contingent on approval of plans or written specifications. Although a process for developing standard plans had already begun to take shape in Vermont, the flood nevertheless furnished a powerful, added incentive to produce standard designs, and the practice became a principal component of all bridge-building programs in Vermont soon after the flood. This reliance on standard designs also forced increasing dependence on review by state and federal engineers, once a matter left to the complete discretion of towns.

During the flood reconstruction, engineers assigned specific types of bridges uniformly according to each crossing's length. Steel truss bridges became available in increments of 10 feet for spans shorter than 100 feet; 20 feet for longer bridges. Pratt through trusses became standard for structures between 100 and 160 feet, and Parker trusses were typically specified for greater lengths. The polygonal upper chords of the Parker design increased the depth (and strength) of the trusses at mid-span, the area of greatest stress, allowing a corresponding increase in span length. Most structures were 21 feet wide, and only a few

Statement of Significance (continued)

bridges were individually designed for specific sites. The appearance of truss bridges also changed, becoming more stout. Rolled I-beams requiring no assembly often were used as verticals and diagonals in truss webs, and the size of these steel components distinguished bridges erected after 1927 from earlier, lightly-built spans. Improvements in rolling mills and steel alloys made production of these larger, stronger I-beams economical. Bridge 15 reveals several of these advances in steel manufacturing, notably the rolled beams used as verticals and diagonals in the truss webs. Its rivet-assembled girders also reveal greater breadth than those of earlier truss types.

In truth, this transformation in the design and fabrication of metal truss bridges had begun to occur as early as 1900, and the ripples of this change quickly reached Vermont. During the last decade of the nineteenth century, steel production became more economically efficient, and consolidation of steel companies ensued. Industrial monopolies became an important factor in the bridge industry when the American Bridge Company was incorporated in 1900 by financier J. P. Morgan. That year, twenty-eight firms representing a large percentage of the country's bridge fabrication businesses were acquired by Morgan's emerging conglomerate. Eventually, his bridge empire became part of the United States Steel Corporation. Standardization of bridge design and fabrication was one important consequence, the dominance of American Bridge Company, in New England and other regions, another. Not surprisingly, American Bridge Company played a profitable role in Vermont's post-1927 flood reconstruction.

The bridge across the White River at Sharon has historically been an important one to the community, the only crossing of that river in the town and the principal means for those who have lived in the southwesterly third of the town to reach Sharon village. Circuitous routes via South Royalton village to the north and via West Hartford village to the south have offered the only alternatives. A crossing at this site appeared on the 1869 Beer's Atlas, and annual town reports for 1872 refer to work on an arch bridge, suggesting the possibility that a Burr arch-truss stood at the site during that period. Various annual reports during the remainder of the nineteenth century refer to Sharon's "River Bridge," a name that occasionally appeared in twentieth century annual reports, as well.

At least one of the bridges that preceded Bridge 15, and possibly the bridge destroyed by the 1927 flood, was a metal truss span that today warrants mention. A photograph postcard postmarked August, 1909, reveals that structure to be a double-intersection Pratt truss, but the design owes more to American engineer Squire Whipple than to Caleb and Thomas Pratt, whose plan for a bridge with rectangular profile, wooden verticals in compression and diagonals acting in tension but confined within panels, was patented in 1844. Although Whipple produced a number of designs for which patents were never issued, one bridge in particular became widely used. Whipple modified the rectangular profile of the Pratt bridges by sloping the top chords at each end panel, a design that proved to be more efficient, and the resulting trapezoidal profile eventually became standard for Pratt trusses. Equally important,

Statement of Significance (continued)

Whipple employed diagonals in tension that extended across two panels, a web configuration that he described as "two crossings of diagonals" or a "double-cancel" truss. Railroad engineer John Murphy modified Whipple's trapezoidal bridges, principally by adding pin connections, and promoted the design successfully, always giving credit to Whipple. These bridges gained prominence after the Civil War, especially for long-span railroad crossings, and are appropriately called Murphy-Whipple trusses, the older siblings to the double-intersection Pratt truss. Although other examples may have existed, the bridge at Sharon is closest version of a Murphy-Whipple truss to have been documented thus far in Vermont.

Unfortunately, little else is known about the Murphy-Whipple bridge and annual town reports offer only vague clues about its date of construction. Substantial sums for painting Sharon's "River Bridge" are noted in 1898 and 1899; a plank railing (possibly the low curbing visible in the postcard) was also installed in 1899; and 15,000 feet of plank stringers were installed in 1903. In any case, the bridge was built before 1909, and the view at the time of the photograph looks southeasterly toward the west bank of the river, opposite Sharon village; tracks of the Central Vermont Railroad are also visible.

As a successor to the Murphy-Whipple bridge, Bridge 15 represents a far more common bridge but also clearly reveals the evolving design of Pratt trusses. The trapezoidal profile of the earlier bridge has been replaced by polygonal upper chords, the principal characteristic that distinguishes Parker trusses from the Pratt trusses. In addition, diagonals are now confined to panels, eliminating the redundancy that existed with Whipple's double-intersection diagonals.

Major Bibliographic References

Aldrich, Lewis Cass, and Frank R. Holmes, eds. History of Windsor County Vermont. Syracuse, New York: D. Mason & Company, 1891.

Child, Hamilton. Gazetteer and Business Directory of Windsor County, Vermont. 1883-1884. Syracuse, New York: Journal Office, 1884.

Beers, F.W., ed. Atlas of Windsor County Vermont. 1869. Rutland, Vermont: Charles E. Tuttle Company, 1969; reprint of the 1869 edition.

Roth, Matt, and Bruce Clouette, "Vermont Historic Bridge Survey," WS-15. Typewritten survey available at the Vermont Division for Historic Preservation, Montpelier, Vt.

Town of Sharon, Annual Reports (1872 through 1930, excluding 1874-1884 and 1889).

Vermont Agency of Transportation, "Proposed Improvement Bridge Project, Town of Sharon, County of Windsor" Project Number , dated September, 1994. Montpelier: Vermont Agency of Transportation, Project Development Division.

Section 10: Geographical Data

Verbal Boundary Description

The boundary of the property is the bridge and its abutments. The bridge carries Federal Aid Secondary (FAS) Highway (River Road) (Town Highway 3) in Sharon across the White River.

Boundary Justification

The boundary includes all the land historically associated with the bridge.

Section 12: Photograph Labels

The following information is the same for all photographs:

Name of Property:	Bridge 15
Location:	Sharon, Windsor County, Vermont
Credit:	Robert McCullough
Date:	2007
Negatives:	Filed at the Vermont Division for Historic Preservation
Photograph No. 1:	Historic view of double-intersection Pratt truss destroyed by 1927 flood, c. 1909. Bridge 15 replaced this bridge.
Photograph No. 2:	View looking north
Photograph No. 3:	View looking southeast